

**REMARKS**

Claims 25-34 are pending. By this Amendment, claims 1-4, 6-11, 13 and 24 are cancelled without prejudice to or disclaimer of the subject matter contained therein, and claims 25-34 are added. No new matter is added by any of these amendments.

Reconsideration based on the following remarks is respectfully requested.

**I. Claims 25-34 Define Patentable Subject Matter**

The Office Action rejects claims 1-4, 8, 10 and 11 under 35 U.S.C. §103(a) over U.S. Patent 5,989,945 to Yudasaka *et al.* (hereinafter “Yudasaka ’945”) in view of U.S. Patent 4,683,146 to Hirai *et al.* (hereinafter “Hirai”) and Japanese Patent Application 06-191821 to Kotaro *et al.* (hereinafter “Kotaro”); and claims 13 and 24 under 35 U.S.C. §103(a) over Yudasaka ’945 in view of Hirai and Kotaro and further in view of U.S. Patent 5,667,572 to Taniguchi *et al.* (hereinafter “Taniguchi”). These rejections are rendered moot by the cancellation of all the rejected claims, and are not applicable to added claims 25-34.

The Office Action further rejects claims 1-4, 8, 10 and 11 under 35 U.S.C. §103(a) over PCT Patent Publication WO97/43689 to Yudasaka *et al.* (hereinafter “Yudasaka ’689”) in view of Hirai and Kotaro; and claims 13 and 24 under 35 U.S.C. §103(a) over Yudasaka ’689 in view of Hirai, Kotaro and Taniguchi. These rejections are rendered moot by the cancellation of all the rejected claims.

Applicants respectfully submit that the added claims distinguish over the applied references. Yudasaka ’945, Yudasaka ’689, Hirai, Kotaro and Taniguchi, alone or in any combination, do not teach or suggest a method for forming a silicon film, including applying a liquid material from a nozzle to a substrate, the liquid material including a silicon compound, and evaporating a solvent of the liquid material to form a silicon film on a part of the substrate, as recited in claim 25, and similarly recited in claims 26 and 27.

Instead, Yudasaka ’945 and Yudasaka ’689 each discloses a method for TFT production using polycrystalline silicon. In particular, Yudasaka ’945 teaches disposing a

layer of insulating films under a gate electrode (col. 11, lines 18-27 and Fig. 4 of Yudasaka '945).

In addition, Yudasaka '689 teaches a method of forming a silicon film on a substrate by applying a high composition silane, such as  $\text{Si}_3\text{H}_8$  or  $\text{Si}_4\text{H}_{10}$ . These high composition silanes are available in liquid state to be used as an ink of an inkjet method (page 20 of Yudasaka '689). However, these silanes do not correspond to the chemical formulæ of  $\text{Si}_n\text{X}_{2n}$ , as recited in claim 25, or absence of silylcyclopentasilane in claim 26 or a silyl group compound in claim 27.

Further, Taniguchi discloses a water-based ink composition. In particular, Taniguchi teaches colorant dye particles and organic solvents for the ink composition (col. 2, lines 25-44 and col. 6, lines 43-56 of Taniguchi).

Kotaro discloses a film coating method using an organic solvent. In particular, Kotaro teaches saturated hydrocarbons, unsaturated hydrocarbons, aeromatics and ethers with silane dissolved therein (Abstract of Kotaro). Specifically, Kotaro discloses the compound  $\text{Si}_n\text{X}_{2n+2}$  (claim 1 of Kotaro). However, Kotaro fails to teach or suggest Applicants' features for a  $\text{Si}_n\text{X}_{2n}$  compound in which n and X represent an integer of 3 or more and a halogen atom, respectively, as recited in claim 25.

Further, there is no motivation to combine features related to the TFT processing of Yudasaka '945 or Yudasaka '689 with the organic ink composition of Taniguchi and the organic solvent of Kotaro, nor has the Office Action established sufficient motivation for a *prima facie* case of obviousness. Even assuming that motivation to combine the applied references is established, the combination fails to teach or suggest Applicants' claimed features.

For at least these reasons, Applicants respectfully assert that independent claims 25-27 are now patentable over the applied references. The dependent claims are likewise patentable over the applied references, in particular added claims 28-34, for at least the

reasons discussed as well as for the additional features they recite. Consequently, all the pending claims are in condition for allowance. Thus, Applicants respectfully request that the rejections under 35 U.S.C. §103 be withdrawn.

## **II. The Claims Satisfy Obviousness-Type Double Patenting Requirements**

The Office Action rejects claims 6, 7 and 9 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 6 and 9 of co-pending application 09/701,377 issued as U.S. Patent 6,527,847 to Matsuki (hereinafter “Matsuki ’847”) in view of Yudasaka ’689. These rejections are rendered moot by the cancellation of all the rejected claims, and are not applicable to added claims 25-34.

The claims of Matsuki ’847 are directed to a coating composition by  $\text{Si}_n\text{X}^1_n$ , with  $\text{X}^1$  being a hydrogen or halogen atom, and  $n$  being 4 or more. By reciting Si and  $\text{X}^1$  as having the same number of  $n \geq 4$  atoms, the claims of Matsuki ’847 teach away from Applicants’ compound twice as many halogen atoms as silicon atoms, as recited in Applicants’ claim 25. Nor is there any motivation to combine the TFT manufacturing method of Yudasaka ’689 with the coating composition of Matsuki ’847.

The Office Action further rejects claims 1, 3 and 8 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-10 and 15 of co-pending application 09/802,908 issued as U.S. Patent 6,503,570 to Matsuki *et al.* (hereinafter “Matsuki ’570”). The Office Action rejects further claims 2-4 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-10 and 15 of Matsuki ’570 in view of Yudasaka ’689. The Office Action rejects further claims 10 and 11 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-10 and 15 of Matsuki ’570 in view of Kotaro. The Office Action rejects further claims 13 and 24 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-10 and 15 of Matsuki

'570 in view of Taniguchi. These rejections are rendered moot by the cancellation of all the rejected claims, and are not applicable to added claims 25-34.

The claims of Matsuki '570 are directed to a cyclopentasilane compound film of a ring  $\text{Si}_5\text{H}_{10}$ . In contrast, Applicants' claimed features include the silicon compound is represented by  $\text{Si}_n\text{X}_{2n}$ , in which  $n$  and  $X$  representing an integer of 3 or more and a halogen atom, respectively, as recited in claim 25. Thus, Applicants' claims permit fewer silicon atoms and double the number of halogen atoms as silicon atoms rather than hydrogen atoms as claimed in Matsuki '570.

Moreover, the liquid material of Matsuki '570 consists of a cyclopentasilane and a silylcyclopentasilane (col. 5, line 26 of Matsuki '570). Cyclic compounds such as the cyclopentasilane are precursors for a silicon divalent species, silylene ( $:\text{SiH}_2$ ), which is a chemical reaction intermediate for formation of polymeric silicon compounds. This composition includes the silylcyclopentane, which generates at least two reactive intermediates, *i.e.*, a silyl radical ( $\cdot\text{SiH}_3$ ) and silylene. Matsuki '570 teaches a subreaction involving the two reactive intermediate reactions that occurs in addition to the polymerization reaction to form a polymeric silicon compound.

In contrast, Applicants' features, as recited in claims 26 and 27, include no silylcyclopentasilane and provide only a cyclosilane having no silyl group. Accordingly, Applicants' claimed features provide suppression of subreactions, except for polymerization reaction, enabling a polymeric silicon compound to be selectively obtained.

Consequently, one of ordinary skill in the art would not achieve Applicants' claimed features, even assuming motivation being established to modify the teachings of Matsuki '570. Further, Yudasaka '689, Kotaro and Taniguchi do not compensate for the deficiencies of Matsuki '570, for reasons regarding these auxiliary references as explained above.

Obviousness-type double patenting requires rejection of an application claim when the claimed subject matter is not patentably distinct from the subject matter claimed in a

commonly owned patent. Thus, to establish *prima facie* obviousness, all the claim limitations must be taught or suggested by the prior art (MPEP §2143.03). Applicants respectfully assert that the Office Action does not satisfy these requirements with either Matsuki '847 or Matsuki '570, in combination with Yudasaka '689, Kotaro and Taniguchi. Thus, Applicants respectfully submit that the double-patenting rejections are improper and should be withdrawn.

### **III. Conclusion**

In view of the foregoing amendments and remarks, Applicants respectfully submit that this application is in condition for allowance. Favorable consideration and prompt allowance are earnestly solicited.

Should the Examiner believe that anything further is desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact Applicants' undersigned representative at the telephone number listed below.

Respectfully submitted,



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